HYDRODYNAMIC JOURNAL FOIL BEARING SYSTEM

ABSTRACT OF THE DISCLOSURE

A high load capacity hydrodynamic journal foil bearing system is disclosed, which comprises a top foil and a plurality of undersprings. Preload forces are transferred from the undersprings to internal circumferential compressive forces within a top foil, resulting in low preload forces against the shaft, allowing the shaft to expand at high speeds without increasing the preload forces or overloading the fluid film. One underspring may have a different spring rate than another underspring. The top foil may be normalized to shaft shape and dimensions. These features may be accomplished with using less mechanical parts than other journal foil bearing system designs.